WEEDS and TURF
PEST CONTROL

FEBRUARY 1963

Monthly news for contract sprayers of weeds, turf, ornamentals, and trees

Soil Fumigation: Profitable Jobs for Turfmen....W-8

How Harder Goes After the Weed Business W-18

Northeast Weed Conference Has Tips for CAs . . . W-20

Two-Part Study of Lawn Insects Begins This Month W-10

Here's how!!!

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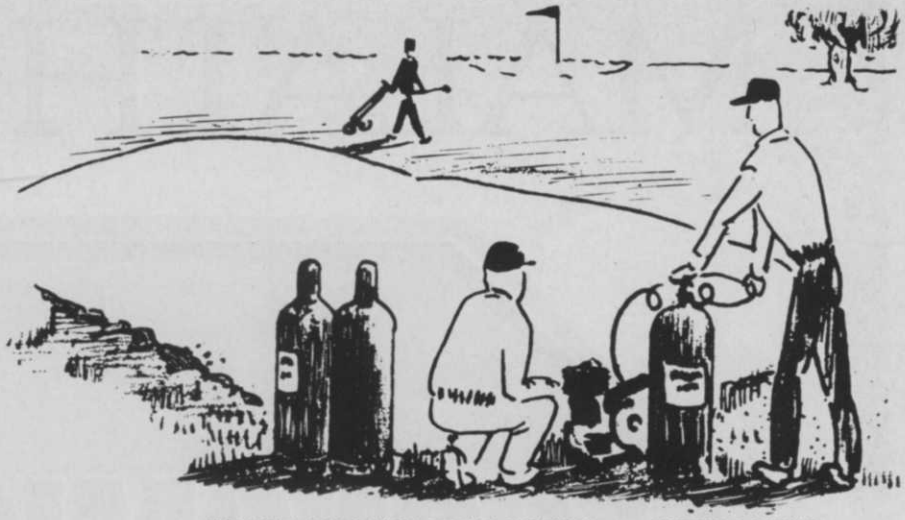

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SOIL FUMIGATION

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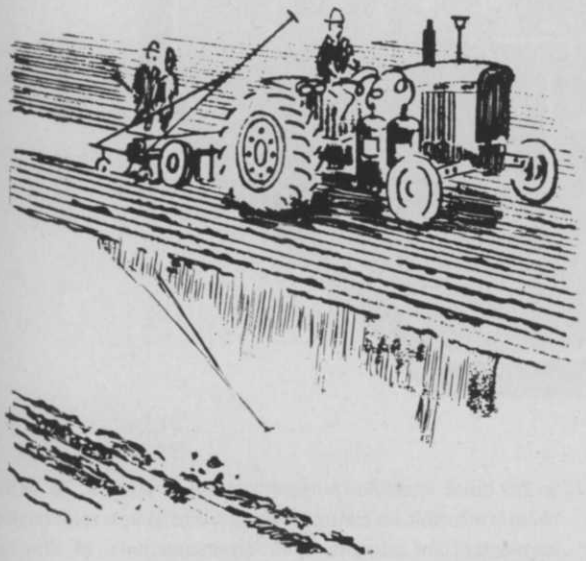

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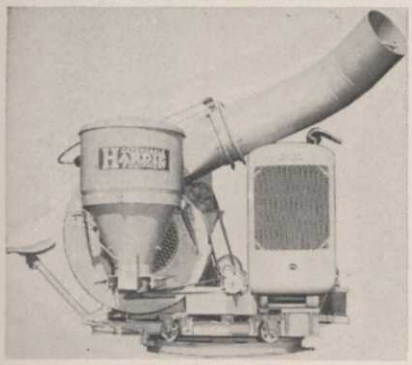

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WEEDS and TURF
PEST CONTROL
A SECTION OF PEST CONTROL MAGAZINE

February, 1963

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Pitfalls

Obviously, interest in a national trade association of contract applicators is growing rapidly. Industry leaders have heard reports from the far corners of the land about this need, and are generally in agreement.

But any new and important project is apt to be fraught with pitfalls. Certainly spraymen know only too well the tremendous economic and technical differences between, say, California CAs and their New England counterparts.

And spraymen, like all human beings, have broad differences of opinion. Sales methods, means of application, even chemicals used, vary from firm to firm. The more "human" elements, such as regional loyalties and desire to keep prized know-how in the family, are even more conducive to disharmony.

So if there's really to be effective industry unity, a hardworking group of applicators must spur America's spraymen to new heights of service and professionalism. Small differences must be laid aside.

There's no place for "me-first-ism" in a trade association!

It's important that members of any business pursuit get together to work for mutual progress. It's important because nobody understands a businessman's problems like others who earn their living in the same business.

But going national is no ready-made, universal remedy for industry ailments. There are pitfalls.

We've had occasion recently to attend several regional meetings, and are impressed with the possibility of some kind of national trade group. But it's not going to be easy.

When, and if, CAs get together to talk about forming their own association, they must leave pet peeves and personal problems outside the conference room. This job is too big to be accomplished by little men.

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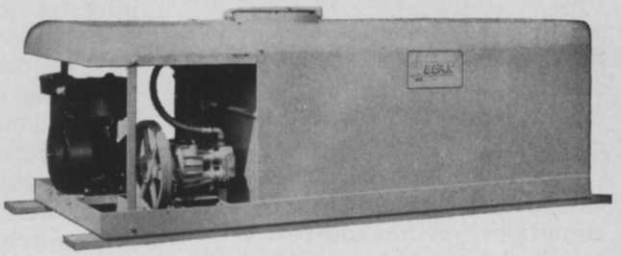

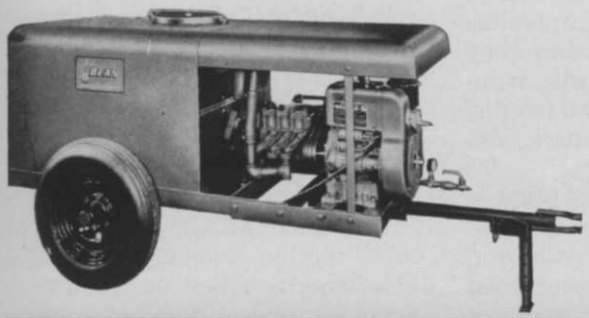

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Workers used 32-feet wide tarps in this soil fumigation job. Tarp edges are sealed with soil to keep gas in.

How to Fumigate Soil for Turf Weed Control

By FRED W. FLETCHER

Research and Development Department, Agricultural and Industrial Bioproducts Div., The Dow Chemical Company, Midland, Michigan

THANKS to chemical research, contract applicators have at their disposal the means to produce thick, healthy turf, in double-quick time. From research laboratories have come powerful soil fumigants which, by virtue of their lethal action against weeds and other soil pests, are highly effective aids in growing new turf or renovating old.

Turf is, of course, best known in home lawns, golf greens, football playing fields, parks, and other mowed areas. Grass varieties have been developed which stand a great deal of traffic. Some of these are adapted to shade, some to sunlight; some to acid and some to sweet soil; some to drouthy conditions; some are adapted to specific areas of the country.

Whatever kind of turf may be established and under whatever conditions, certain soil pest problems are present to beset the custom sprayer, nurseryman, gardener, or maintenance man charged with the responsibility for upkeep.

One such problem is the competition from early weeds. Most desirable grasses are fairly slow to start from seed. Before they have a chance to grow strong and dense, weeds of many kinds usually become very thick and troublesome. They may include weed grasses such as Johnsongrass, quackgrass, and crabgrass.

"Nurse Grasses" May Bring Weeds

It is frequently desirable to renovate turf areas that have become infested with undesirable perennial grasses. Such grasses may grow up in turf from poor seed, or they may occur naturally in the soil. And they may be included in seed mixtures as nurse grasses, which are usually fast-growing. Purpose of these nurse grasses is to prevent erosion, protect the tiny seedlings of desirable grass, and provide a surface which withstands limited traffic while desirable grasses of slower growth are coming along. Experts have long recognized, however, that nurse grasses offer stiff competition to permanent grasses, and, according to some, their value is questionable.

Underground insects and nematodes are serious parasites of desirable turf grasses. Nematodes — destructive, microscopic worms in the soil — often make it impossible to produce good turf unless they are controlled. White grubs, wireworms and many other soil insects, as well as soil-borne diseases, also attack grass roots.

This formidable array of pests — weeds, weed roots, weed seeds, nematodes, wireworms, grubs and plant diseases — all are controlled by the potent chemical action of soil fumigants.

These pest-control materials are not exactly new to agriculture, although some of them have been vastly improved as a result of years of chemical research. Several of the newer materials, Trizone and Brozone soil fumigants manufactured by the Dow Chemical Company and Pathofume (B) and Weedfume manufactured by the Neil A. Maclean Company, two of the pioneers in this field, have proved effective in treating seed and plant beds and in the culture of nursery ornamentals. These two materials, in addition to Dowfume MC-2 soil fumigant, another Dow product, are tools to fight the perennial battle against soil pests in the production of new turf or renovation of old.

Elaborate mechanical procedures have to be followed in applying each of these fumigants, since all are poisonous gases. Their application must be carried out by qualified, competent operators following the manufacturer's use recommendations explicitly. Soil fumigation is not the kind of a project the eager, do-it-yourself home gardener can take on over a weekend. This means more business for contract applicators.

Dowfume MC-2, consisting of 98% methyl bromide, with 2% chloropicrin added as a warning agent, is used on small turf areas, around homes, for example. Trizone, Brozone, Pathofume (B) and Weedfume are more suitable

Information in this article concerning products of the Neil A. Maclean Company was furnished by Norman Ehmann, Maclean vice president, Belmont, California. *Ed.*

for application to large turf areas such as parks, athletic fields, and turf nurseries. Trizone fumigant is a blend of three fumigants — 61% methyl bromide, 31% chloropicrin and 8% propargyl bromide. Brozone is a mixture of 70% Dowfume MC-2 and 30% oil as a carrier. Pathofume (B) is a blend of 67% methyl bromide and 33% chloropicrin. Weedfume is a mixture of 70% methyl bromide and 30% petroleum thinner as a carrier.

Preplant Treatment with Dowfume

In the preplant treatment of soil with Dowfume MC-2, the gas, at 1 lb. per 100 sq. ft., is released as a vapor under a gas-tight tarp such as polyethylene film sealed to the earth all the way around the edges.

This requires precise operation in order to obtain a satisfactory seal and necessary gaseous distribution of the vaporizing material. The pressurized fumigant is released by applicators such as the one made expressly for this purpose by the Neil A. Maclean Company. The tarp is removed after 24 to 48 hours. The former period is adequate in warm weather: the latter may be required in cool weather.

Fumigants Sterilize Soil

If the soil has been cultivated, the gas penetrates to the depth of cultivation or a little deeper. Where the soil is not cultivated, gas penetrates for a few inches but no more. To the depth to which it penetrates, the fumigant completely sterilizes the soil, eliminating weeds, weed seeds, weed roots, nematodes, insects and certain plant diseases. When it has done its work, Dowfume MC-2 leaves the soil in ideal condition to receive seeds of any kind, including grass seeds for new turf.

Where new grass is wanted in place of old, run-down turf, the chemical is applied directly over living turf, killing the old grass and weeds as they stand. After a heavy application of complete fertilizer, the grass seed is then planted on the soil surface through the dead grass. Heavy watering then serves to wash the seeds off the dead vegetation and bring them into contact with the soil.

Broad Spectrum Fumigants

All five of these soil fumigants have a broad spectrum of activity, controlling a wide range of soil pests. Where soil-borne diseases are a serious problem, Trizone and Pathofume (B) are said to be particularly effective.

Unlike the application of Dowfume MC-2, Trizone, Brozone, Pathofume (B), and Weedfume are injected into the soil from pressurized cylinders with a simple tractor-mounted, chisel-type applicator to a depth of about six inches. Chisels are spaced 12 inches apart.

Because the chisel-type applicator is used for injecting these fumigants, they may be used only in treating areas which have been plowed under and the soil worked up, or prepared, for turf renovation.

Use Plastic Tarp to Seal Soil

A plastic tarp is required to seal these fumigants in the soil, preferably within about 20 minutes following application. Where overall treatment of a large area is

Tractor-mounted, chisel-type applicators, such as this, can be used to inject fumigants into soil before planting seed.

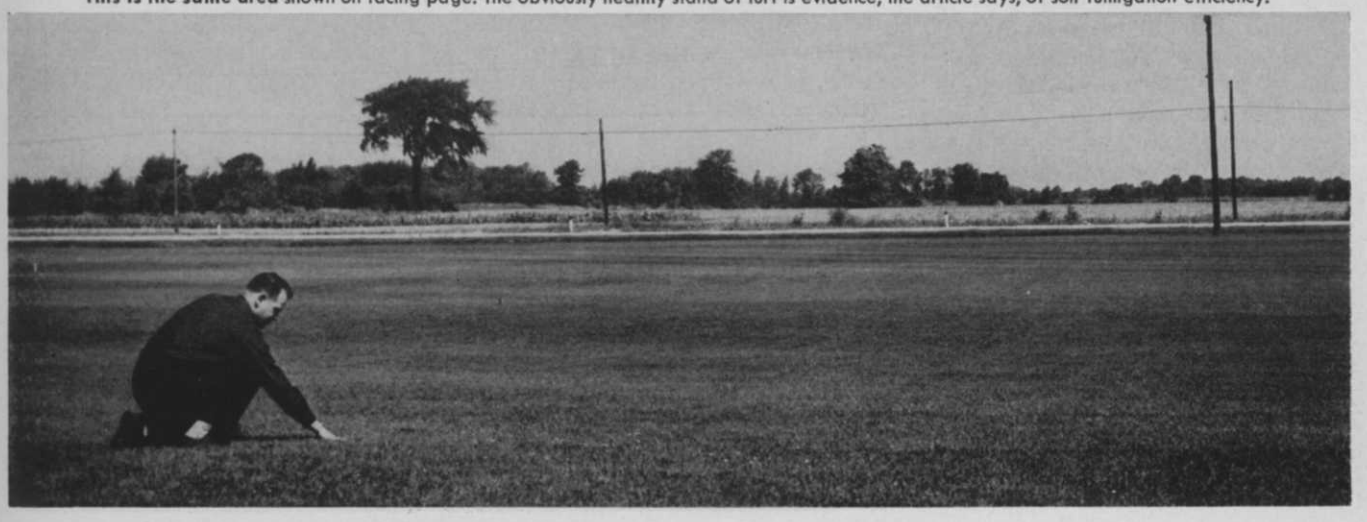
carried out, the cover is laid manually. (In treating nursery seed and plant beds, the fumigant is injected and the tarp is laid simultaneously by a mechanical tarp-layer.)

Trizone and Pathofume (B) are recommended for use at 200 to 300 lbs. per acre, Brozone at 500 lbs. per acre, and Weedfume at 300 to 500 lbs. per acre. In each case, the treated soil is kept covered for at least 48 hours. Grass seed can be planted within three to four days after the cover is removed.

Whatever the method and materials used in treatment, the grass grows without competition from soil pests. And *how* it grows

(*Continued on page W-27*)

This is the same area shown on facing page. The obviously healthy stand of turf is evidence, the article says, of soil fumigation efficiency.



ENTOMOLOGISTS estimate that there are as many insects in every square mile of earth's surface as there are human beings on the whole planet.

This fact would not be hard to convey to a suburban homeowner whose lawn is infested with insects. When these hexapods get too plentiful in turf, beautiful grassy areas may be severely blighted. Enter the contract applicator. The market is wide open for services of competent CAs who diagnose and treat ailing turf areas such as golf courses, school and hospital lawns, cemetaries, parks, and roadsides, not to mention the huge home lawn demand.

To help CAs better understand

Infamous Japanese beetle, shown here in a remarkable close-up of an adult, is a prime ornamental pest; larva destroys lawns, and is probably the best known lawn insect among the general public. Shiny metallic coloration of the Japanese beetle makes this eastern pest easy to spot.

How to Identify and Control Insect Pests in Turf

the pests with which they are dealing and how to control them best, *Weeds and Turf* surveyed extension services of state universities from 8 different geographical regions to find variations in pest prominence and control recommendations.

How Insects Damage

Understanding insect habits helps explain why techniques may vary from one pest to another. Most damage results from feeding activities. Beetle grubs eat grass roots, but moth and butterfly larvae feed on above-ground leaves. Other pests, such as chinch bug nymphs, feed by piercing stems with their mouthparts to suck plant juices. There are some pests, such as ants and the cicada killer wasp, which do not destroy grasses directly, but deface lawns by burrowing in turf. It is easy to see that controls, though chemicals may be the same, will differ from pest to pest.

In general, to control pests in soil, insecticide is applied so that it penetrates the ground to the zone where insects feed. Apply insecticides with sufficient water in a spray to soak the chemical into the soil. If dusts or granules are used for smaller jobs, thoroughly water turf after application.

For leaf-feeding species, if granules or dusts are used, water lightly to wash insecticide down around the crown of the plant where insects feed. Completely irrigate and flush off insecticide a few days later. Spray treatments are similar to soil pest control treatments, except that the object is not to wash insecticide into the soil but rather to have it remain on the soil and leaves. Don't water again until necessary. Usually spray treatments for leaf feeders last for only 1½ to 2 months.

Turf insecticides are usually formulated from chemicals which have proved their worth against other insects. Today, however, there are lawn insecticides which were originally intended for nematodes and crabgrass (V-C 13 and Zytron respectively. Zytron has not yet been labeled for control of lawn insects).

While turf insecticides may be obtained in dust or granular form for small jobs, most economical for the CA are the spray applications, provided equipment is available. Sprays can be prepared from either wettable powder or emulsifiable concentrate. Both require occasional agitation because the insecticide is not completely soluble in water.

All of the popular lawn preparations are products of organic synthesis. Either the chlorinated hydrocarbons such as DDT, heptachlor, and chlordane, or organic phosphates such as parathion, Diazinon, Ethion, and Trithion, will give good control when used properly against the right target pests. These chemicals are toxic to insects and humans alike and must be handled with respect, knowledge, and care.

Beetle Grub Control

Several hundred species of beetles (family Scarabaeidae) infest soils in the larval or white grub stage. Some of these are: May Beetle, June Beetle, Japanese Beetle, Asiatic Garden Beetle,

Lawn spraymen will soon find their busy season upon them, so *Weeds and Turf* begins this month a two-part article which defines the basic elements of turf insect control. This in-depth research paper will be concluded next month with a discussion of chinch bugs, lawn moths, and miscellaneous invaders.

why settle for HALF the pest control business you can handle?

A booming demand for weed control and turf spraying has hit most areas. Pest control operators jumping into the weed and turf field to meet the demand find the market promising — and profitable. YOU can branch out into this "other half" of the pest control business, and make money doing it, with the help of T-H Malathion from our Philips Roxane Division.

BRANCH OUT WITH T-H MALATHION!!

You know T-H Malathion as a potent killer of flies, mosquitoes, ants, and most other flying and crawling insects. You know T-H Malathion is easy to apply and safe to use. Well, T-H has increased the usefulness of **T-H** Malathion by offering it to you in several formulations which are highly effective for control of plant aphids, mealybugs, spider mites, bagworms, tent caterpillars, and other insects which infest ornamental shrubs and lawns. Malathion applied as a dust, wettable powder, or spray, is safe to use—it's low toxicity presents no hazard to man or animals.

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Japanese beetle is spreading relentlessly westward despite strict quarantines. Adult stage, shown here in comparison with a millimeter rule, ruins flowers and foliage by its feeding.

Oriental Beetle, Masked Chafer, Rose Chafer, White-fringed Beetle, Green June Beetle, and the Rhinoceros Beetle. Turf grubs are a major problem in New England, Midwest, and Central Plains states. They range from the East Coast as far west as Kansas, and south into Florida, although their relative pest classification is lower in importance in the southern states.

Typically, eggs are laid about 5 inches deep in the soil at about 25 eggs per female. Eggs hatch in 2 to 3 weeks. Larvae feed on roots and underground plant parts, pruning them severely at infestation levels. Greatest damage is noticed when weather becomes hot and dry; grass withers from lack of water uptake. By autumn, larvae are about 1 inch long. One can readily recognize them by their characteristic "C" shaped body posture. Grubs have a dark head and three pairs of legs on the forepart of their body. Most of the species remain in the soil for 3 years; some spend only one year; while a few take 4 years to develop.

During warm months, grubs can be found 2 to 3 inches deep in soil; in winter they migrate below the frost line where they hibernate in a cell. Some species pupate in early summer and adults develop in late summer, but they do not emerge until the following spring when temperatures rise into the 70's again. This phenomenon of adults remaining in the soil is unexplained.

Test for Grubs

If grubs are suspected in a lawn, a test may be made to confirm this before treatment. With a knife, cut an area in the sod about 1 foot square and 2 to 3 inches deep, leaving one side attached in hinge fashion. Roll back the sod and probe the dirt beneath and dirt clinging to the mat. Sifting may also help. Grubs may then be seen and counted. Repeat this test several times in other sections of the lawn. Average the number of grubs seen in all tests; if it figures 6 or more per square foot, an insecticide should be applied.

Standard chemicals for control of turf grubs include chlordane, aldrin, heptachlor, dieldrin, and in some areas Diazinon. Chlordane usually is applied at 1¼ pounds *active ingredient* per 5000 square feet, though the rate may vary in the South to 2 pounds *active* per 5000 square feet. Aldrin, dieldrin, and heptachlor generally range around ⅓ pound active per 5000 square feet.

In areas such as the South where some chlorinated hydrocarbons may not be effective, use of 1% parathion has given successful control of grubs. Care with this organic phosphate is stressed because of its hazard both to user and to children and pets who may use a lawn for a play area.

Insecticide labels should always be checked for proper application rate. Sufficient water should be used to insure washing insecticide into the soil. Fifteen gallons for 1000 square feet is generally recommended; somewhat more may be needed on heavy clay soils. Strive for even distribution of pesticide over turf. Beetle grub control may take 6 months to become completely effective. "Guarantees" of time periods for continued control vary from state to state. Some from Ohio claim 10 years effective control; Connecticut offers a conservative 3 to 5 years; and Indiana says grubs should be controlled 4 years with one good application. Florida reports that control is not as long as northern states, but white grubs are not considered a major turf pest there.

On the eastern seaboard where the Japanese Beetle is a prominent pest, biological control has been used against the grub stage. Spores of the bacteria, *Bacillus popillae*, or milky disease, are distributed over an area of turf. This disease is specific for the Japanese Beetle and will kill a large portion of grubs. Some will live to reproduce the disease and infect more grubs as the population grows from year to year. Milky disease does not kill all beetle grubs, but keeps their numbers at a tolerable level for turf. It is reported most effective along the central coastal states.

Miscellaneous Beetles

Wireworms (Elateridae) are larvae of what are called click beetles. Many species are distributed throughout North America. A common economic pest of agricultural crops, these beetles also thrive in cultivated turf where they attack grass roots and basal portions of stems. Damage results when they bore into plants causing them to wither.

Adults are those beetles which click and jump when turned on their backs. Clicking throws them into the air; the desired effect is for them to land on their feet.

Controls use the same chemicals as applied for white grubs with one exception: chlordane needs only

White grub is the name for larvae of scarab beetle. These widespread pests have voracious appetites and can ruin a lawn so that turf can be rolled up like a rug. Note strong mouthparts, curled position, legless hindparts.

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½ the dosage for effective wireworm control.

Another family of beetles which is very damaging in some years, especially in the South, billbugs (Cucurlionidae), are sometimes called snout beetles or weevils. Billbugs, as their name implies, have a long bill or snout in the adult stage. At the end of this snout are their powerful chewing mouthparts, which they use to chew into grass stems near the base. Adult billbug feeding causes stunting and deformities in plants.

Larvae damage root systems of turfgrasses, mostly bluegrass and redtop in general, Bermudagrass in the Southwest, and zoysia in the Southeast. Their burrowing into stems and roots causes lawns to bleach and wither.

Billbugs in their many species are distributed throughout the United States. They vary in color from clay yellow to reddish brown to jet black, and are generally about ¼ inch long. Control for most of the U.S. consists of using chlordane at twice other beetle grub dosage or, in other words, 40 fluid ounces of chlordane 75% (8 pounds per gallon) emulsifiable concentrate per 5000 square feet. Florida, although not much billbug damage was reported there last year, recommends 4 pounds active (maximum) of V-C 13 per 5000 square feet, or Trithion at 12 ounces active ingredient per 5000 square feet.

Depending upon whether the larval or adult stage is the target, applications should be soaked into the soil somewhat, or left on leaves respectively.

The fungus, *Beauveria bassiana*, originally introduced into United States to control the corn borer, also kills billbugs. This control, however, occurs naturally and is not commercially available.

A number of lepidopterous larvae cause extensive damage when present at infestation levels. They feed directly on stems and leaves of grasses.

Sod Webworm Control

Sod webworms (subfamily Crambidae) are pests which are damaging throughout the United States, as indicated by our survey. "They are most common in housing developments in California," according to Professor Andrew S.

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Deal of the University of California at Riverside. "Lawns are most certain to be damaged by sod webworms unless chemical treatments are applied," he adds.

"Sod webworm larvae are the most damaging species of caterpillar in Florida," reports Professor S. H. Kerr of the University of Florida at Gainesville. They are ¼ to ¾ inch long, chunky, and usually spotted and coarsely haired. Larvae construct tunnels of pieces of grass and excrement, and line them with silk which they spin. Tunnels are built close to the surface near bases of grass plants. Webworms hide in their tubes in daytime and forage for food at night. They chew off blades of grass and sometimes carry the pieces back to their burrows. Resultant damage resembles dollar spot fungus disease somewhat, being irregular circles of brown or bleached areas.

"We are currently having one of the heaviest sod webworm outbreaks in home lawns that has been reported. They were very destructive during late summer and early fall of 1962," Professor Dave Matthew of Purdue University, Lafayette, Ind., told us.

Sod webworms prefer new lawns, particularly of bluegrass, bentgrass, and fescues. Damage appears in late, hot summer months when home lawns and golf greens are well kept and watered, but other turf is brown and dormant. The moths prefer succulent growth for egg laying and tend to accumulate in well-kept turf.

Adults, ½ to 1 inch long, are pale

Typical resting place of the sod webworm in turf is shown encircled in green. Note ravaged blades of grass around the insect.

Pencil point illustrates size of miller of tropical sod webworm. Larvae chew up expensive areas of turf annually. Adults will emerge from smooth, bulletlike pupae. Note chewed grass leaves and frass or excreta in culture. All three stages may be seen at once in southern United States.

or buff moths commonly called "millers." They are jerky fliers and have a projection on their heads formed from extending mouthparts. From this appearance they are also called snout moths. Millers can often be seen flying over a lawn in early evening during midsummer. Females at this time drop eggs at random in the grass. There are normally 3 generations a season, but there may be 4 in California and Florida.

Pyrethrum Test

A test for species which hide in soil during daytime, such as the sod webworm, may be made by sprinkling the edge of an area suspect of infestation with 1 gallon of water containing 1 tablespoon of pyrethrum extract. This treatment will irritate the larvae and force older worms to the surface where they can be seen and positively identified.

Control measures are for a leaf-feeding type. Most widely used against sod webworms are DDT and toxaphene. From 6 to 9 ounces active toxaphene per 5000 square feet gives control in Florida. DDT, from 10 to 14 ounces active per 5000 square feet, gives control in the North at the lower rate and in the South at the higher one. Aldrin, dieldrin, and heptachlor also give control at ⅓ pound active per 5000 square feet. Chlordane at 9 ounces active per 5000 square feet (½ the wireworm rate) is sometimes used in the North.

In addition to choosing a proper insecticide for each area, there are other tricks to sod webworm control. Insecticides should be applied in the late afternoon when turf is relatively dry. Lawns should be mowed and watered prior to treatment and given a day or two to dry out. After spraying, turf should not be watered for at least another 24 hours, preferably 48 hours.

If a dry application is made, recommendations are to water lightly to wash insecticide down around the crowns of grasses. Irrigate after 2 or 3 days.

In Kansas, where sod webworms are the "principal problem," Professor D. E. Gates of Kansas State University at Manhattan summed up difficulties and offered controls for his region as follows: "Control problems appear to be in keeping the insecticide in the proper place rather than a failure of the material. The area of feeding of sod webworms at ground surface makes it difficult to hold the materials in the proper area. If left exposed to sunlight, the materials are destroyed rapidly. If they are soaked in, another flight of moths lays eggs for larvae above the treated zone. Apparently our best recommendation is to soak the soil and apply the insecticide to the surface with very little watering in. A treatment in June, July, and August seems to be needed under the heavy moth pressure we are experiencing this year (1962)."

Continued next month

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By DR. LEE C. TRUMAN and PROF. WILLIAM L. BUTTS

Published in cooperation with Purdue University

"Scientific Guide to Pest Control Operations" preserves in durable book form, all 18 lessons for the widely-heralded Correspondence Course in Pest Control Technology offered by Purdue University and originally published a lesson a month in Pest Control magazine. Every page has been reviewed and brought up to date with latest use-information, and is now available in this beautifully printed, extensively illustrated, easy-to-read manual everyone interested in urban/industrial insect or rodent control should have.

PCO ORIENTED

"Scientific Guide to Pest Control Operations" (published by Pest Control magazine) was written by and for pest controllers. Author Dr. Lee C. Truman is a successful PCO in Indianapolis, Ind., and Professor William L. Butts is in charge of the four-year pest control curriculum of Purdue's entomology department. Working with them was an editorial committee representing important phases of the pest control industry: Dr. John V. Osmun, head of Purdue's entomology department; Dr. Howard O. Deay, Purdue professor of entomology; Dr. Philip J. Spear, technical director of the National Pest Control Association; Dr. Harry D. Pratt, in charge of insect and rodent control training for the Communicable Disease Center of the U.S. Public Health Service; George L. Hockenyos, PCO-researcher, owner of Sentinel Laboratories, Springfield, Ill.; and James A. Nelson, editor and publisher of Pest Control magazine.

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Weeds around light standards are killed before they grow with Simazine pre-emergent herbicide.

Raceway Job Draws Harder to Weed Control

ARE you a pest control operator hoping to expand your business? The growth of Harder Tree Service, Inc., shows one way to do it.

Harder, located in Hempstead, Long Island, is an offshoot of Harder Extermination Service, Inc., also in Hempstead. It operates what is reported to be the largest custom weed control service in the metropolitan New York area. Headed by Bob Felix, vice president and general manager, Harder is a well-managed enterprise whose main problem has been to keep abreast of rapid growth and expansion.

Active primarily in New York's five boroughs, lower Westchester County, all of Long Island, and parts of New Jersey, Harder's principal operating area contains countless industries, many large government facilities, an assortment of petroleum installations, and numerous miscellaneous customers needing weed control.

Many of its customers use chemical weed control to achieve a neat appearance lasting all season at a cost lower than with older methods. Roosevelt Field Shopping Center, Sperry Rand, and race tracks, such as Aqueduct, Belmont Park, and Roosevelt Raceway, use Harder's weed control services.

Some customers must prevent all weed growth to reduce fire hazards at tank farms, bulk plants, refineries, or around combustible dry materials such as lumber piles. It is not sufficient in such circumstances to kill weeds, because dead weeds are also a fire hazard. The strategy here is to prevent any weed growth from getting started in the first place. Harder accomplishes this with pre-emergence applications of chemicals before any weeds have emerged, early in the spring.

Government installations need weed control for several reasons: controlling fire hazards, improving visibility by eliminating interfering vegetation, and sprucing up appearance.

Treat Brooklyn Naval Yard

At the New York Naval Shipyard (Brooklyn Navy Yard), Harder used Simazine to control weeds growing close to some desirable ornamentals. "We prefer Simazine in such situations because it does not move sideways in soils to endanger cultivated plants," explained Bob Felix, adding that it has a long residual effect, keeping the area free of most annual broadleaf and grassy weeds for an entire season.

Harder sprayed an extensive marsh area at the Naval Air Station, Floyd Bennett Field, with the chemical Radapon, to kill a rank growth of reeds 10 to 12 feet high that was obstructing the view and making air operations more difficult. At other locations, Harder has found the combination of 2,4-D and 2,4,5-T to be best for controlling brush.

Numerous municipalities and school districts in Nassau County, and the Long Island Park Commission, are all customers for Harder services.

An intimate knowledge of costs and a carefully worked out system of bidding on new business has permitted Harder to bid successfully on jobs as far away as Baltimore. This happened in competition with a contractor in the Baltimore area.

Harder's approach to estimating a job involves both on-the-site examination and a detailed examination of blueprints of the site. The total area to be treated is calculated by using a polar planimeter, an instrument that automatically measures the area of irregularly-shaped figures. The history of past weed control efforts

on the job is carefully considered. In examining the site, Bob Felix carefully notes any potential problems, with reference to wind direction, valuable cultivated plants, mechanical obstructions, and any operational difficulties.

The profitability of the operations and, equally important, the absence of claims for damage, testify to the careful evaluation Harder conducts. Freedom from claims also results from careful training for the foremen who are knowledgeable about their work.

Roosevelt Raceway Was First Job

The operations that are today known as Harder Tree Service began in 1954 as a modest diversification effort of the parent, Harder Extermination Service, Inc., a 40-year-old concern. In that year the organization began caring for Roosevelt Raceway's shade trees and the areas where weeds were troublesome. In 1957, Harder decided to go into industrial weed control in a big way. Two years later, in 1959, the shade tree and weed control work was formally organized as a separate corporate entity, Harder Tree Service, Inc.

The weed control clients are confined to industrial, commercial or governmental units. The shade tree work includes those, plus private residential clients, also.

Since 1957, growth has been steady. Later this year, Harder will add a $25,000 extension on its main building at Hempstead for additional office and equipment area.

Harder uses three hydraulic sprayers to do its herbicide spraying. A small outfit, delivering 4 gallons per minute, is equipped with a spray boom, and is manufactured by H. D. Hudson. This tank holds 150 gallons. Two larger sprayers deliver 15 and 20 gallons per minute, respectively. The latter is considered ideal for general purpose spraying. These two units, made by John Bean, hold 300 and 500 gallons. Inasmuch as many sites have areas inaccessible to vehicles, the sprayers are equipped with 1200-foot hoses to reach all parts of a job site.

All weed spray equipment is painted yellow to avoid using it to spray valuable plants. No weed control chemicals are ever used in equipment set aside for controlling insects and diseases. Equipment and chemicals are kept locked to avoid errors. Only two people have the keys.

Tree Work Goes on All Year

The equipment is used heavily from March 15 until September 1. Harder is able to retain good help by diverting men to shade tree work, which goes on all through the year. There is, consequently, no threat of seasonal layoffs for conscientious employees.

There are no special problems in weed control in public amusement areas, Felix says, but the public often reacts unpredictably to bare soil during midsummer, when it fully expects to see wisps of grass or weeds contributing green to the view.

Dead Weeds Look Odd in July

This reaction is even more evident if chemicals have been applied as a contact, instead of a pre-emergent, treatment. In this case, the dead, brown vegetation characteristic of late fall seems out of place in mid-July. While the overall effect is not one to cause any concern (especially when compared to the benefits that accrue), operators might want to give extra consideration to pre-emergent treatments which prevent this brownout.

Herbicides must be selected with great care. Proper chemical in this application allows Harder to kill weeds but leave the tree unharmed.

Species of plants which are particularly troublesome in raceway jobs, Felix says, are quackgrass, crabgrass, plantain, dandelion, horsetail, and sorrel.

Touchup Jobs in June

Bob Felix believes in doing a complete job for Harder customers. After an intial spraying early in the spring, Bob visits the job to determine the control accomplished. If re-treatment or touchup sprays are needed, they are applied early in June.

Harder maintains a completely separate crew for weed control and tree work. To make sure everything is up-to-date, Bob puts his insatiable appetite for information to work for him. Constant references to the literature, including periodicals, attendance at weed control meetings, and close contact with the Nassau County Extension Service keep him technically qualified to guide this important Harder division.

Customers Vague about Weed Work

Because of the newness of chemical weed control, customer education is a very important task. Many potential customers are not yet aware of what chemical applications can do for them, and how low the cost is, compared with other methods. Harder's steady clients have discovered those facts.

The steady growth of Harder Tree Service activity indicates more clients are becoming aware and enlightened.

Mowing around parking lot poles and fire hydrants is time consuming and therefore expensive. Harder helps Roosevelt Raceway eliminate this expense by killing the weeds before they spring up.

Success of the 17th northeastern conference was due in large part to these '62-'63 officers and committee chairmen (l to r): Dr. Richard D. Ilnicki, Rutgers University, program; Dr. J. A. Meade, University of Maryland, secretary-treasurer; Dr. G. D. Hill, duPont, research coordinating; A. J. Tafuro, American Cyanamid, vice-president; Dr. C. R. Skogley, University of Rhode Island, public relations; Dr. Lawrence Southwick, Dow, awards; F. A. Ashbaugh, West Penn Power, sustaining membership; and Dr. D. A. Schallock, Rutgers University, president.

Science No Longer Divorced from Public, 17th Northeast Weed Conference Decides

Weed control leaders, both research men and applicators, are adopting a brave and dynamic new attitude towards their industry.

Over 700 delegates to the 17th Annual Northeastern Weed Control Conference agreed that the old concept of "pure science," which largely ignored public opinion, is now passing away, and responsible investigators recognize a new responsibility to tell their story to the public.

This public relations awareness was an underlying theme throughout the annual gathering of northeastern weed experts, held this year at the Hotel New Yorker, New York City, January 9-11.

Two keynoters sounded the prevailing theme in the early sessions of the conference. In a talk on pesticides and balanced environment, Dr. L. G. Merrill, Jr., Dean of Agriculture, Rutgers University, New Brunswick, N.J., reminded delegates that most pest control programs, whether insect or weed oriented, are aimed at the total physical environment, and take all aspects of this environment into consideration, despite what certain irresponsible popular writers may dream up to inflame the public.

"We must leave for future generations an environment favorable for procreation of desirable species, including, I hope, homo sapiens," Dean Merrill asserted.

"We are at the state that we must use pesticides to tip the balance of environment in our favor," he added. Otherwise, man would be forced to live on rootstocks and game, hardly diet enough for today's teeming millions. But the scales are tipped, and Dean Merrill calls this favorable situation a genuine "chemical miracle."

Second in the impressive team of industry spokesmen was Parke C. Brinkley, President of the National Agricultural Chemicals Association, Washington, D. C.

Brinkley cited the extreme expense suppliers must face in the development and marketing of useful new chemicals. These pesticides undergo formidable testing to make sure there's no possibility of ill effects on anyone if the chemicals are used properly.

In return, Brinkley continued, chemical suppliers have the right to expect a profitable return on the millions they invest in research and development of new weedkillers and insecticides.

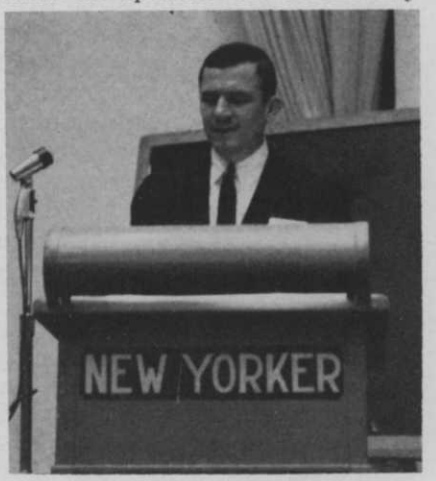
Herbicide Production Doubles

The Washington executive also gave delegates a breakdown on the growth of America's chemical pesticide industry, and weedmen were particularly interested to learn herbicides have advanced from 10% to 18% of the total of all pesticides produced, including insecticides, nematocides, fungicides, algaecides, etc.

Long noted for its technical excellence, the Northeastern Weed Control Conference once again demonstrated that its members are not ivory-tower-confined researchers with no direct communication with the practical aspects of weed control. Particularly noteworthy at this year's conclave was the increase in the number of contract applicators present.

Moreover, while much of the program is given over to agricultural subjects, there was a wealth of urban/industrial seminars which are of utmost importance to progressive application companies.

Evidence that the NEWCC would get down to brass tacks was apparent from the beginning. Lead-off speaker on Wednesday



Hearty praise for our chemical world was voiced by keynoter Dr. L. G. Merrill, Jr., Dean of Agriculture, Rutgers University.

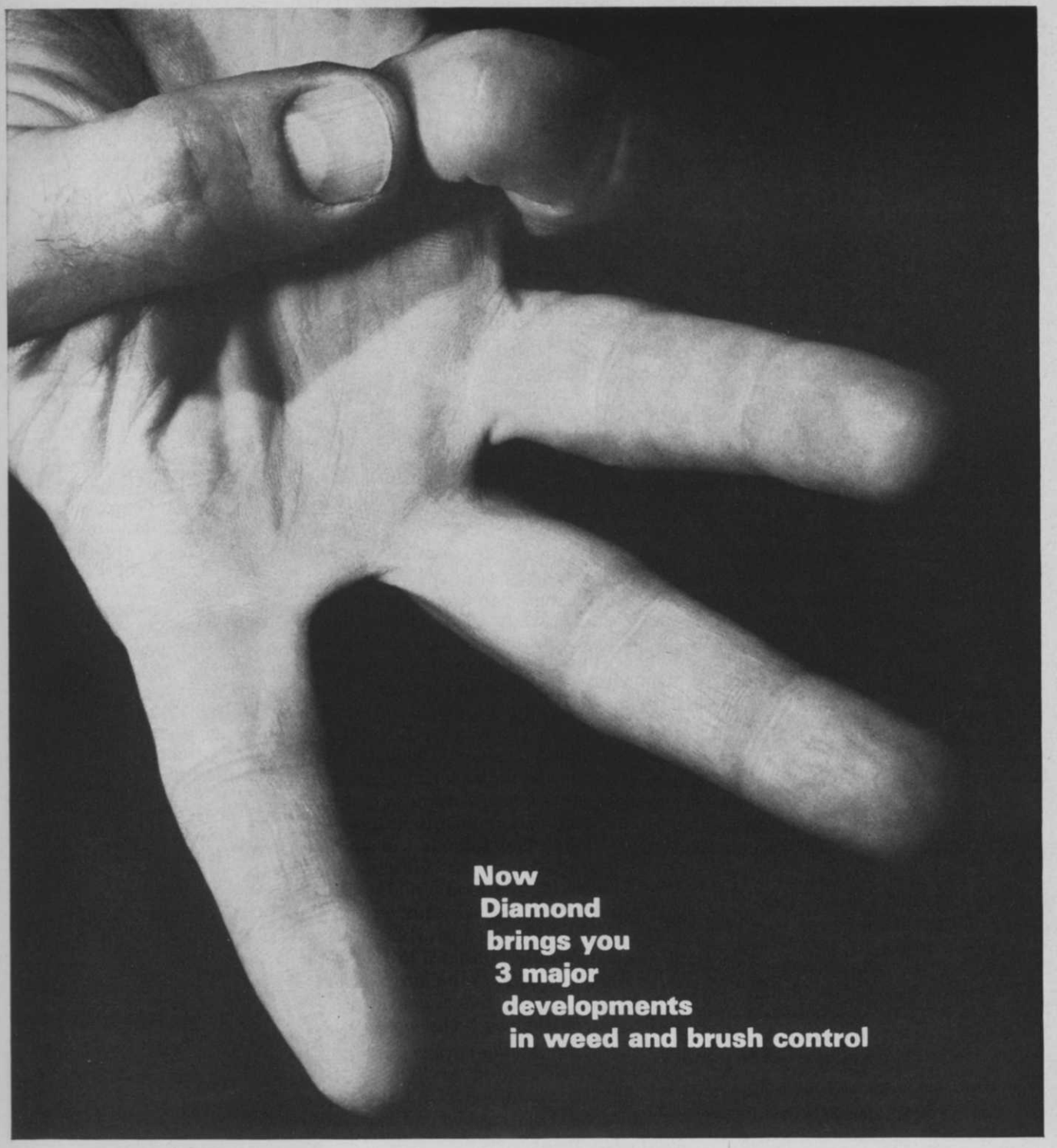
was A. T. Hanson of the Boston Edison Co., Boston, Mass., whose topic, "What a Utility Company Expects in Chemical Brush Control Work," was of vital interest to researchers and applicators alike, all of whom flocked to the Manhattan meeting to enlarge their knowledge of herbicides in all their varied phases.

Hanson outlined what is to be expected from chemical suppliers and the utility company, and discussed in detail what he wants from contract applicators who perform brush control work on his lines.

Utilities Want Careful CAs

The New Englander pointed out, for example, that the hazards of drift must be carefully avoided,

An ample staff helped the 700 delegates speed through registration.



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Diamond Chemicals

PCOs in increasing numbers are showing up at weed control seminars across the land. Here a group of pest controllers compares notes about the NEWCC program (l to r): L. Y. Goldman, New England Pest Control, Providence, R.I.; T. H. Cooper, Cooper Pest Control, Trenton, N.J.; Walter Blank, Abalene Pest Control, Poughkeepsie, N.Y., Richard Sameth, Residex Corporation, Clark, N.J.; and Jim MacLachlan, also of Abalene in Utica, N.Y.

because even though the applicator takes responsibility for such occurrences (and is usually insured for them), the utility company nevertheless suffers from a public relations standpoint.

Hanson warned that failure of applicators to perform expert, successful jobs can only lead to development of new or different methods.

That applicators are already aware of this need for perfecting methods was upheld by the number of applicating firms which send technical men and managers, and by the number of firms who contribute money through NEWCC sustaining memberships.

Following Hanson in the fast-paced opening session was Dr. Richard Ilnicki, New Jersey Agricultural Experiment Station, New Brunswick, who reported on research being conducted with promising new herbicides.

New chemicals of interest to readers of *Weeds and Turf* included Disan, a new pre-emergent herbicide for weed control in turf, which Ilnicki describes as "relatively effective." Disan is a product of Stauffer Chemical Co. The New Jersey scientist also said Banvel-D, from the Velsicol line, has appeared quite specific for control of clover and mouse-eared chickweed in lawns.

Chemicals still in the development stage, but which appear promising, include Hercules 9573, which looks good for pre-emergence weed control in turf.

A Whole Stable of New Chemicals

Another slant on the flock of new chemicals for weedmen was offered following the annual banquet Wednesday night. "New Chemicals from Industry," as this section was called, is now a regular feature of the Northeastern Conference.

More details were offered on Hercules 9573. Company spokesmen maintain the experimental chemical is useful as a pre-emergent crabgrass killer, and indicate the product is currently offered as a technical material or as an 80% wettable powder for experimental use by qualified persons.

From the West Coast, U. S. Borax representatives discussed Monobor-Chlorate, a granular weed killer described as "a new and unique formulation of sodium borate and sodium chlorate." According to company officials, Monobor-Chlorate has high bulk density and high water solubility, and is effective on a wide range of annual and perennial weeds and grasses. "It is particularly useful and effective for control of Johnsongrass and certain other weedy grasses on noncrop land," *Weeds and Turf* was told.

Borax is also introducing Tritac, a new weedkiller for water spray application to control deep-rooted perennial herbaceous weeds on noncrop lands.

Tritac is chemically known as 2,3,6-trichlorobenzyloxypropanol.

Tritac is also manufactured and sold by Hooker Chemical Co.

Velsicol has, in addition to its Banvel-D, a new experimental herbicide called 59-CS-52, which will be available for limited field testing in 1963.

"Preliminary trials have shown that 59-CS-52 has considerable pre-emergence herbicidal activity against many broadleaf weeds and some annual grassy weeds," Velsicol said.

This new herbicide is available formulated as the potassium salt of 2-methoxy-3,6-dichlorophenylacetic acid in water at the acid equivalent of 4 lb/gal.

Amchem also has a new post-emergent herbicide, which, while primarily for agricultural uses, may be of interest to applicators.

Amchem 61-207 was used to control yellow rocket and several other broadleaf weeds in the Northeast during two years' testing.

This product is an emulsifiable concentrate containing 1.5 lb/gal. of the active ingredient. It is designated H-8043 by the Hercules Powder Co., with which Amchem is carrying on cooperative research.

Sessions Industry - Oriented

Whole sections of the 1963 conference were devoted to industrial weed and brush control, to aquatics, and to turf.

Utility, highway, and railway rights-of-way weed control practices were closely screened, with talks from several utility officials who've supervised such treatment programs.

Clarence E. Staples, Brush Control Engineer from the Central Maine Power Co., explained work his company has done on summer basal spraying of rights-of-way.

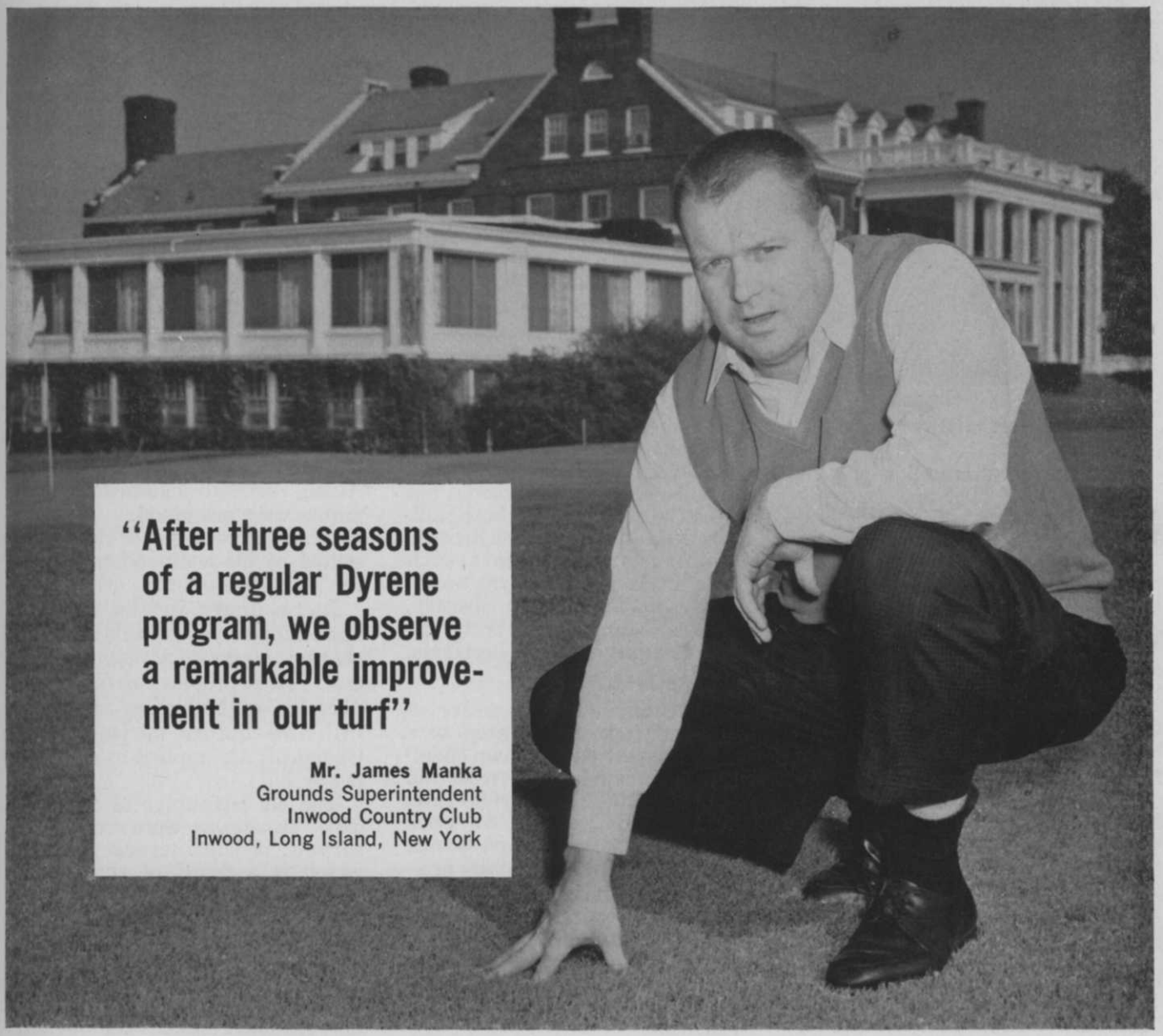
Basal spraying, of course, attacks the roots instead of the foliage of the infesting plant.

"Selective summer basal spraying on Central Maine Power Co. transmission rights-of-way has proved to be at least 40% cheaper than cutting," Staples said.

In a paper prepared by a trio of duPont researchers, analysis of a new formulation of Hyvar (*W&T*, July, p. W-4) was presented to the NEWCC section on railway work. Research was accomplished by C. W. Bingeman, R. W. Varner, and J. E. Prendergast, all of duPont's Wilmington, Del., research installation.

While Hyvar is now commercially available and successfully proven as an effective weed killer for industrial sites, the duPont spokesmen claimed, it was felt that

Delegates found time to visit chemical and equipment suppliers' booths. Here Dr. Dayton Klingman, (left) USDA, Beltsville, Md., chats with W. T. McClellan, also of the Beltsville station, while Amchem's John Gallagher looks on from the background.


"After three seasons of a regular Dyrene program, we observe a remarkable improvement in our turf"
Mr. James Manka
Grounds Superintendent
Inwood Country Club
Inwood, Long Island, New York

"Conditions here encourage the development of "melting out," "fading out," "dollar spot" and related fungus conditions which are more apt to become active with plenty of humidity, heavy dew, cool evenings and hot summers. Dyrene has contributed a great deal to successful control of these diseases on this course," continues Mr. Manka.

Inwood Country Club's position between Jamaica Bay and the ocean is conducive to the heavy dew and humidity that provide good development conditions for Helminthosporium-Curvularia complex, causes of fading out and melting out. Unsightly brown patches speckle the course when these conditions are allowed to take hold, and as Mr. Manka says, that makes every golfer on the course unhappy.

Mr. Manka sprays the Dyrene every two weeks from early May through mid-September over all fairways of the 18-hole Inwood course, which totals about 130 acres in extent. He uses Dyrene at a proportion of 2 oz. per 1,000 sq. ft. of turf and mixes 22 lbs. in 200 gals. of water to spray 4 acres of turf.

"If there were to be any indication of "dollar spot" or any of the Helminthosporium-Curvularia complex, I would increase the dosage over the 2 oz. per 1,000 sq. ft. rate I'm using now, but there never has been any need to do that," Mr. Manka says. Mr. Manka is an agronomist with a degree from Purdue University.

Results like this are not unusual because Dyrene is the new broad spectrum fungicide that controls more turf diseases than any other single turf chemical. Dyrene may be used on a schedule, all season long, as a preventative because of its long residual characteristics. Or it can be used as an eradicant for spot treatment. It is safe and easy to use with all common spray equipment. The formulation is dyed green to blend with the turf . . . actually *improves* the appearance of greens immediately.

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Congratulations two ways. Outgoing president Dr. D. A. Schallock (left) welcomes new prexy A. J. Tafuro, who smiles his approval of the job well done in 1963. Tafuro, from American Cyanamid, heads the 1964 weed conference.

a different formulation might be useful.

Hyvar is 5-bromo-3-isopropyl-6-methyluracil. The new formulation, called Hyvar X Weed Killer, is 5-bromo-3-*sec* butyl-6-methyluracil.

Dupont says its new product has been extensively tested on railroad rights-of-way and on other industrial sites in the Northeast, and in other climatic areas of the country.

Tests indicate Hyvar X acts against grasses equally or better than the parent product, Hyvar, duPont maintains.

The chemical is expected to be commercially available in 1963. Experimental quantities are now being offered to qualified operators.

Reports from Amchem Products of Ambler, Pa., drawn up and presented by that company's John E. Gallagher (with Harold M. Collins), show that the terrestrial and now-established herbicide, Fenac, has possibilities as an effective aquatic herbicide.

These claims were presented in the NEWCC Aquatic Section, in which delegates homed in on new developments of this increasingly important phase of weed control.

Gallagher maintains that Fenac, which Amchem manufactures, has successfully controlled both alligator weed and the water hyacinth.

Small plot treatments with Fenac in large bodies of water, however, have not been effective, Gallagher warns, apparently because of dilution of the herbicide.

Turf Data Plentiful

Applicators who are active in lawn spraying were treated to a series of papers on new lawn chemicals, and new results with old ones, in the NEWCC Turf Section. Inclusion this year of an open discussion was considered a real benefit by contract sprayers present, because it enabled them to quiz the experts on their individual problems.

One paper presented this year was the work of Dr. Ralph E. Engel of Rutgers University, New Brunswick.

Called "Crabgrass Control Obtained on Turf Treated with Several New and Developmental Pre-Emergence Herbicides," Dr. Engel's work outlined several test results: (1) Bandane shows promise of a high degree of crabgrass control at 60 lbs/acre; (2) Diphenatrile appears capable of a more consistent performance when used at the higher rate of 60 lbs per acre; (3) Triflurin gives excellent control with 3 to 4½ lbs/acre but less control at 1½ lbs/acre; and (4) Hercules H-9573 and Stauffer R-4461, experimental compounds, both show promise as pre-emergence crabgrass herbicides.

Windup of the industrial weed and brush section, which came Friday morning before the noon adjournment, was of considerable interest to contract applicators.

Scan Dormant Cane Broadcast

In a talk called "New Tools for Highway Weed and Brush Control" by R. J. Marrese of Diamond Alkali, several significant techniques were examined.

Dr. Marrese's paper was presented by his Diamond colleague, Dr. R. A. Sprayberry.

Increasingly in the contract applicator's eye these days is the concept of dormant cane broadcast. This process involves application of herbicides after late fall and before spring thaw. Chemicals are applied to dormant brush.

One big advantage of dormant cane broadcast, Sprayberry observed, is the increased safety which is a result of the timing which takes place when no valuable crops are growing.

Less obvious to researchers, but equally crucial to contract applicators, is the opportunity to use spraying equipment and personnel all year long. Besides the obvious economic advantage, this could mean spraymen might retain personnel for longer consecutive periods, hence providing industry with more highly trained, qualified

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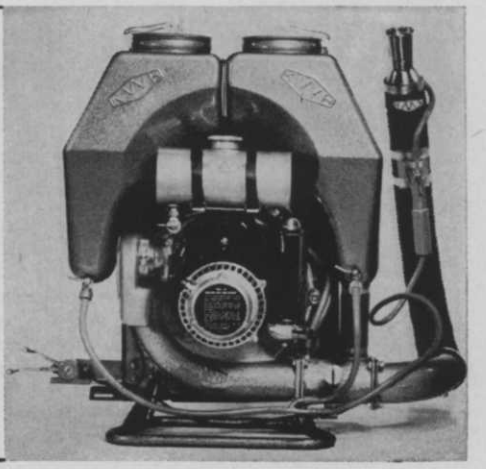

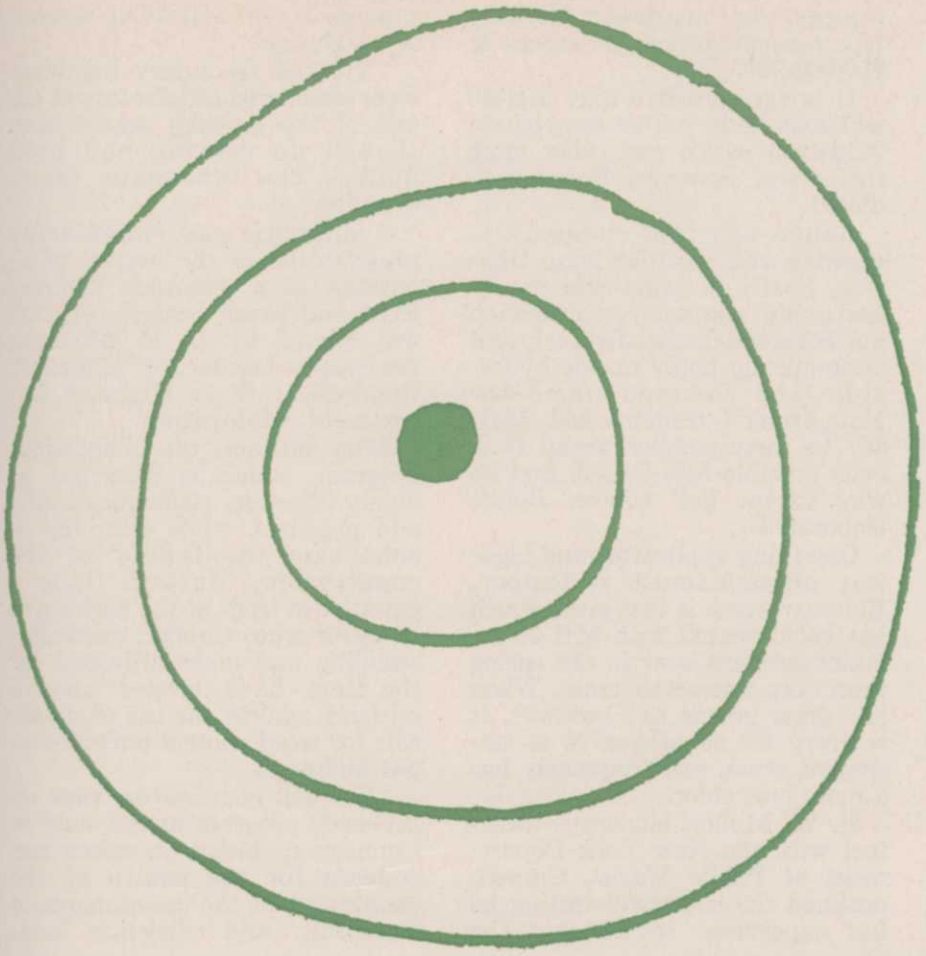

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spray operators to cope with the increased demand for industrial weed and brush control by contract firms.

Dr. Sprayberry, utilizing a series of slides, also showed results obtained with Diamond's new herbicidal formulation, Dacamine, a product described as "safe as amines, effective as esters." Dacamine can be used during the growing season.

Sprayberry referred his audience to an article which appeared in the January 1963 issue of *Weeds and Turf* (p. W-19).

It's important for spraymen to realize, Sprayberry continued, that fast browning is not a characteristic of Dacamine activity. This permits translocation of the chemical into the rootzone, the Cleveland scientist revealed.

More on MH-30

Another product very much in the news is Naugatuck's MH-30, a growth-regulating chemical which is in wide use on some of the nation's highway rights-of-way.

Naugatuck researcher Paul Bohne presented delegates with latest data on his company's product, which has its essential design the curbing of America's staggering roadside mowing bill, estimated now in excess of $50,000,000.

It is very possible that MH-30 will soon be in use on cemeteries, industrial parks, and other large turf areas, however, Bohne predicted.

Bohne said his company is working with the John Bean Division, FMC, an equipment manufacturing company, to develop machines which can effectively and economically apply maleic hydrazide (the common name for Naugatuck's trademarked MH-30) to these smaller areas. It is even possible MH-30 will find its way to the golf course, Bohne elaborated.

One thing applicators and highway officials must remember, Bohne warned, is that grass which has been treated with MH-30 remains dormant later in the spring than does untreated grass. When the grass greens up, however, it is every bit as attractive as untreated grass, and frequently has a more lush color.

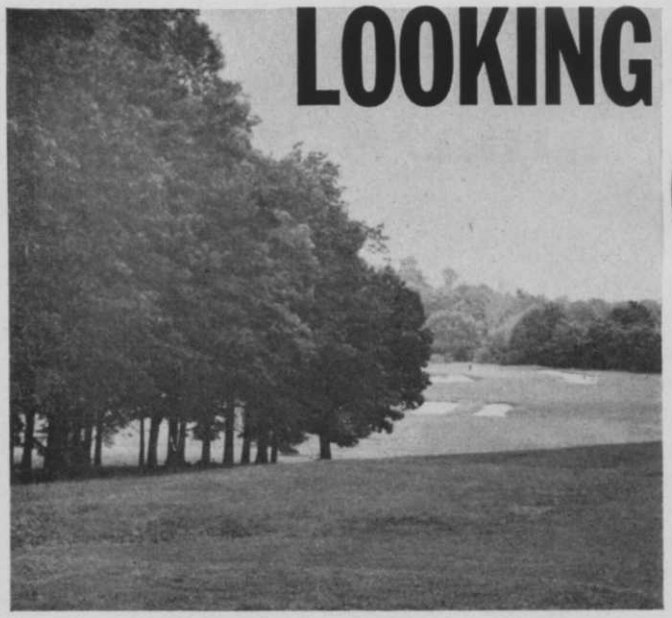
E. W. Muller, landscape architect with the New York Department of Public Works, Cornell, outlined the successful testing he has supervised to discover the practicality of MH-30 on secondary highways.

"Treated secondary highways were considered satisfactory at the end of the growing season even though no mowing had been done," the landscape expert revealed.

A dramatic and enlightening presentation of the overall effectiveness of a statewide highway weed and brush control program was offered by K. R. Mattern, Assistant Landscape Engineer, Connecticut State Highway Department, Middletown.

After outlining the Connecticut program, which is described as highly effective, economical, safe, and practical, while retaining or enhancing the beauty of the countryside, Mattern flung a gauntlet in front of the harbingers of terror who, through misunderstanding and utter disregard for the facts, have leveled abusive criticism against the use of chemicals for weed control purposes on our highways.

"We will continue to have an herbicide program in the state of Connecticut based on safety and concern for the health of the people and for the maintenance of beautifully and efficiently land-



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scaped highways," the road authority declared.

In a related speech, J. L. Beasley, Highway Landscape Supervisor, Massachusetts Department of Public Works, Boston, described the current turf management program underway in his commonwealth.

Beasley praised some of the current chemicals, such as MH-30, and mentioned products which he uses, such as Urox and Urab, but he spoke cautiously when addressing himself to the chemical industry.

This Massachusetts official feels firms are not engaging in enough research to develop products specifically for the highway market. "The chemical industry today is bypassing our potentially lucrative market," he challanged.

Beasley says Massachusetts uses contract applicators, and has about 140 contracts for roadside work.

Other sources have pegged the Massachusetts budget for this program at $1,500,000.00 yearly.

This year's varied program was too diverse and too detailed to be adequately summed up in a news report, but the entire proceedings have been published by the Northeastern Weed Control Conference and are available for $4.50 a copy. Those wishing to add this volume to their reference material may write to Dr. John Meade, Secretary, Northeastern Weed Control Conference, Department of Agronomy, University of Maryland, College Park.

In charge of the 1963 conference was outgoing president Dr. Donald A. Schallock, Rutgers University, New Brunswick, N. J. Dr. Schallock now becomes chairman of the 1964 awards committee.

New president, and the helmsman who'll guide the Northeast weedmen towards their next conference, is A. J. Tafuro, American Cyanamid Co., Princeton, N.J. Second in command is new vice president, Dr. R. A. Peters, University of Connecticut, Storrs. Dr. John Meade is secretary-treasurer again in 1963.

Program chairman will be Dr. G. D. Hill, Jr., E. I. duPont de Nemours, Wilmington, Del. Next year's coordinating committee is headed by Dr. C. J. Noll of Pennsylvania State University, and Geigy Agricultural Chemical's J. Flanagan will head up the important public relations committee.

Sustaining memberships will be guided by A. Lohr of Hercules Powder Co., Wilmington, Del., and Dr. Don Schallock will head the awards committee, a tradition for the outgoing president of the Northeastern Weed Control Conference.

Dr. Meade told *Weeds and Turf* that the 1964 conference will be January 8-10 at the Hotel New Yorker in Manhattan. Those who want advance information may communicate directly with Dr. Meade.

Soil Fumigation

(*from page W-9*)

— producing thick, strong turf in a very short time. Because fumigation produces more vigorous turf, most of the problems with foliage diseases, such as dollar spot and brown patch, are eliminated. The same is true of the summer "browning out" in blue grass so common in certain areas of the country, notably the East.

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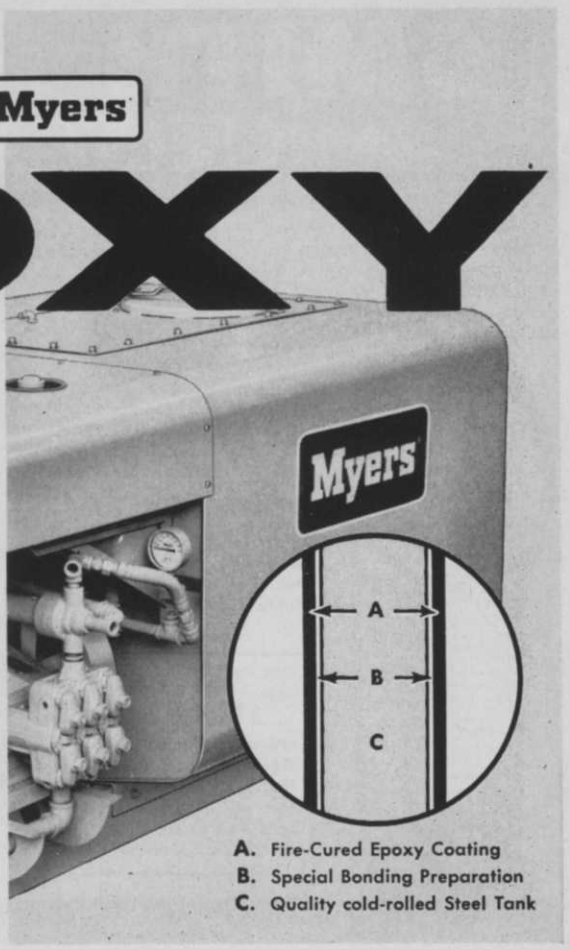

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Turf Tips Highlight 34th Turf-Grass Conference Feb. 11-15 in San Diego

Recommendations for contract applicators on all aspects of turf maintenance, by a panel of college specialists from all parts of the country, is featured at the 34th International Turf-Grass Conference, Feb. 11-15 in San Diego, Calif.

More than 2500 delegates are in San Diego for the convention, largest turfgrass management and exhibition show in the world. Golf Course Superintendents Association sponsors the event, in which turfmen from many foreign countries, as well as the entire United States, will participate.

"Advances in soil sterilization and fertilization will also receive detailed examination," Roy W. Nelson, chairman of the conference, and vice president of the Golf Course Superindendants Association, told *Weeds and Turf*.

Staff members of *W&T* are in San Diego for the program, to provide a detailed review of proceedings that will appear in the March issue, due out March 5.

Evaluation of the factors which determine success of various fertilizers begins the session on turf stimulants. Review of tests on plant response to fertilizers and recommendations for overcoming specific problems are also included. Special feature is a preview of advanced technology, and what CAs can expect in future fertilizers, Nelson reveals.

On Wednesday, third day of the conference, delegates meet in two groups, one composed of turfmen from northern and eastern areas, and the other of delegates from the West and the South.

Regional problems are being highlighted, but several problems of interest to CAs from either parts of the country are included.

Both groups are hearing leading greens superintendants review more important turf problems, and are giving individual recommendations for best results in treatment.

Meeting Dates

34th Annual International Turf-Grass Conference and Show, El Cortez Hotel, San Diego, Calif., Feb. 11-15.

Aquatic Weed Control Society Annual Meeting, LaSalle Hotel, Chicago, Ill., Feb. 12-13.

Western Weed Control Conference, Sheraton Hotel, Portland, Ore., March 20-22.

2nd Annual Florida Turfgrass Association Trade Show, Hotel Seville, Miami Beach, Fla., May 2-4.

Turfmen in the southern and western meeting are devoting a special session to particular problems in the northwestern United States, where CAs report the market for turf maintenance is especially vigorous.

Concluding the conference is a session on contract greens sterilization techniques, where CAs are gaining much useful information, applicable to lawn maintenance as well as golf course greens.

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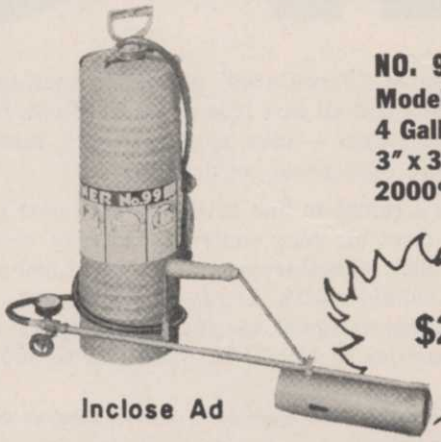

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Borax Releases New Herbicide

Monobor-chlorate, a sodium borate-sodium chlorate herbicide, new from U.S. Borax, is characterized by quick-killing action and safety, the firm announces.

"Because of these two factors, the product is universally useful in knocking out a wide range of weeds and grasses around suburban homes, and in and around industrial sites, with utmost safety," J. F. Corkill, vice president of U.S. Borax's Marketing Development, claims.

The granulated weed killer can be applied dry by conventional hand spreaders, or as a spray when dissolved in water, the company reports. When used according to directions, the product is harmless to persons or pets either during or following application, and does not create a fire hazard when being used, Borax claims.

For more information on Monobor-chlorate, write to U.S. Borax, 630 Shatto Place, Los Angeles 5, Calif.

USDA Has Guide for Flowers

New bulletin from the U.S. Department of Agriculture lists pests that attack most common flowers, and the control measures for each. Also contained in the 80-page guide is a section on general feeders, and a large list of specific feeders.

Agricultural Information Bulletin No. 237, "Controlling Insects on Flowers," is available for 40 cents from the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C.

Harder Opens Arborist Firm

Harder Arborist Supply Co., Hempstead, N.Y., has been formed as a division of the Harder Tree Service, Inc., Frank K. Harder, president of the new venture, announces.

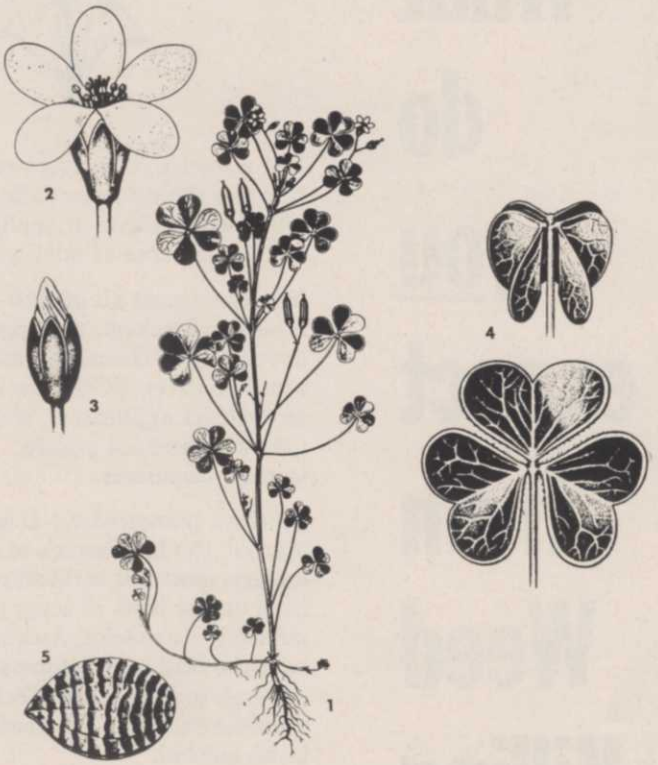
"We hope to satisfy the needs of tree specialists with the finest products and best service available anywhere," Harder stated.

A complete arborist catalog is available by writing to Harder Arborist Supply Co., P.O. Box 111, Hempstead, N.Y.

Know Your Species

YELLOW WOODSORREL

(Oxalis stricta)



Yellow woodsorrel is a perennial, reproducing by seeds. It is plentiful in gardens, lawn edges, roadsides, and gravelly or stony uncultivated places. Oxalis is native to and widespread throughout North America. Two other species closely related to *Oxalis stricta* and commonly called woodsorrel are O. *europea* and O. *florida*. These differ only in minor detail and are easily recognized as woodsorrel from the description of O. *stricta*.

Stems are weak and branched near the base of the plant; they are hairy and sometimes root at the joints (1). Oxalis may stand 4 to 18 inches high. Pale green leaves (4) have very long petioles (stalks), and are sour tasting due to the oxalic acid in their tissues. The slightly hairy leaves are divided into three heart-shaped, partially folded leaflets, looking somewhat like a clover leaf.

Flowers (2, 3) are 5-petaled, yellow, and occur in groups of two and four. Seed capsules (5) are ½ to 1 inch long, slender, with five longitudinal ridges, and a pointed beak. The capsules burst and shed numerous seeds which are flattened, elliptic, and conspicuously cross-ridged.

Rootstock in yellow woodsorrel is absent as contrasted with the other species of *Oxalis* which are able to give off new plants by sprouting of the rootstock.

Control of yellow woodsorrel is restricted to post-emergent treatment of turf. Silvex applied as a foliage spray has shown very good control without injury to turf grasses.

Prepared in cooperation with Crops Research Division, Agricultural Research Service, United States Department of Agriculture, Beltsville, Maryland.

(DRAWING FROM NORTH CENTRAL REGIONAL PUBLICATION NO. 36, USDA EXTENSION SERVICE)

Mr. Contract Applicator:

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General vegetation control. Amchem's general weed killer products are widely used by applicators and known by industry as efficient and economical.

Rank weed and brush control. Amchem's selective chemicals have been developed specifically to control high weeds and brush for large estate and industrial use.

Weed and brush control is our business . . . our *only* business. Ask about Amchem—in lawn and garden, in farm and in industrial herbicide control products. We've been satisfying home owners, farmers and industry for years. Your customers can buy the same kind of satisfaction. Let us help you plan your contract application future.

the makers of WEEDONE . . .

AMCHEM **AMCHEM PRODUCTS, INC.**

Amchem and Weedone are registered trademarks of
AMCHEM PRODUCTS, INC. (Formerly American Chemical Paint Co.)
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Trimmings

Pinky's sheer energy. It's always encouraging to see contractors take time to better their knowledge of the business. One lawn sprayman who altered his busy schedule to attend the NEWCC this year was Louis "Pinky" Pingitore, whose Nu-green Lawn Spraying Co., in Reading, Pa., is now in its sixth successfull year. Pinky's primarily interested in turf care, although he also contracts for mosquito spraying. This genial and energetic applicator has an informative sheet he gives potential customers which outlines every step in lawn maintenance from seeding to weed control to verti-cutting or aerating. So informative is Pinky's instruction sheet, in fact, that more pessimistic spraymen might fear the customer would take the do-it-yourself route. Not so, says Pingatore. "Customer's can see by our how-to-do-it flyer that we know what *we're* doing, and it simply helps build trust in our company." Here's a sales-builder other CAs around the country may want to think about. If Pinky's success is any indication, it's a real go-getter for new business!

* * *

Red's ready. **Speaking of "colorful" contractors, we also ran into Jim "Red" MacLachlan, a District Manager for Abalene Pest Control, at the Northeastern Weed Control Conference. Red tells us he just opened a new branch office in Utica, N.Y., and is all set to bring Uticans the latest in lawn and weed work, fields in which Abalene is very active. We're always glad to "see Red," and wish him all success in the new location.**

* * *

Eller high water? Speaking of conferences, we just talked with Chipman Chemical's Paul Eller, who's president of the Aquatic Weed Society, which is meeting this month (Feb. 12-13) at Chicago's LaSalle Hotel. Paul says he's got a really solid program which should be a high water mark for the young organization. *Weeds and Turf* will have a staff member on hand for this confab, and in March will carry a detailed report on the meeting.

* * *

Kudos for Skogley. **Harried reporters at meetings with concurrent sessions are always appreciative of press rooms and the help of the folks who staff them. Dr. Dick Skogley, from the University of Rhode Island, who took charge of the NEWCC press function this year, was a boon to all of us who hurried away from Manhattan with deadlines in mind. We're sure Dick's also aware of the fine job done for us by Margaret Herbst of the Turf Research Foundation, on hand again this year at the New York meeting to coordinate releases, and fill us in on last minute details. Hats off to you both!**

* * *

Rake's away. Must take real devotion to forsake sunny Southern California for the cold of the Northeast, but U. S. Borax research chief D. W. Rake reversed the Greeley adage and came east for the NEWCC, where we talked wistfully about the kind of weather he enjoys in his Anaheim headquarters. We've got to convince the boss that a California trip is in order, pronto! It would take much less than a "twenty mule team" to drag us in that direction!

TURF:

One application of dieldrin controls major turf pests for an entire season

Dieldrin controls soil insects such as Japanese beetle grubs, white grubs, sod webworms and ants. These insects feed on grass roots, cut off nourishment and moisture and cause browning and bare spots.

Dieldrin also controls annoying, health endangering surface pests such as ticks, fleas and chiggers. Here are the details.

Now is the time to size up your turf insects problem and do something about it.

If you cannot start healthy, vigorous grass growing in certain areas, or if you have bare patches, soil insects could be the cause.

Turn up some sod in these trouble spots and sift through the dirt. See if you don't find grubs or some other evidence of soil insects.

Long-lasting dieldrin protection

If these soil insects are your problem, you can control them with dieldrin.

A single application lasts for a year or more. It protects roots—lets them utilize maximum nourishment and moisture.

Dieldrin can be applied in a number of ways. It can be sprayed on as a liquid or applied in granular form with a fertilizer spreader. Dieldrin is also available in fertilizer mixtures. This lets you combine the two operations and saves time and money.

Controls ticks, fleas and chiggers, too

Dieldrin also controls ticks, fleas and chiggers. These pests are not only annoying, but also are public health problems.

In addition to applying dieldrin to turf, to get maximum control of these above-ground pests, treat weeds, the ground around low-growing shrubs and buildings—anywhere these pests might take refuge.

Where to get dieldrin

Dieldrin is available from your local insecticide dealer under many well-known brand names. Accept no substitute. Check the label or the ingredient statement on the formulation you buy for the name *dieldrin*.

Shell Chemical Company, Agricultural Chemicals Division, 110 West 51st Street, New York 20, New York.

Control all these turf pests with dieldrin

European chafer grubs	Cutworms
Green June beetle grubs	Sod webworm
White grubs	Armyworms
Northern masked chafer grubs	Sowbugs
	Pillbugs
Asiatic garden beetle grubs	Snails
Oriental beetle grubs	Wireworms
Japanese beetle grubs	Root maggots
Earwigs	Slugs
Ants	Chiggers
Striped grassworm	Fleas
Mole crickets	Ticks

SHELL

dieldrin

A PRODUCT OF SHELL CHEMICAL COMPANY

WEEDS!

a menace to everyone / profits for you

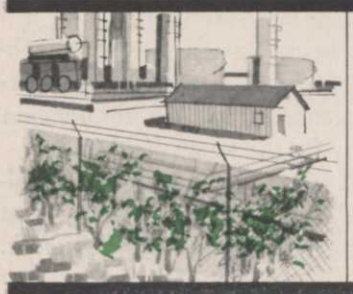
There's money in weeds, if you're on the right side of them. And that's with any of the many Du Pont weed and brush killers. They make custom weed control jobs easy and effective. ■ Check the typical problems below; chances are you'll see at least half of them within a mile of where you're standing. ■ The answers are easy, too, because Du Pont has a product to meet almost any weed control situation you'll encounter.

THE PROBLEM:
Hard-to-kill perennials —Johnson grass, Bermuda grass, nutgrass and quackgrass.

THE ANSWER:
Efficient, long-term control of grasses and weeds with HYVAR® isocil weed killer, an entirely new organic herbicide.

THE PROBLEM:
Rampant weed growth in storage areas causing fire hazards as well as wood and metal deterioration.

THE ANSWER:
A single application of KARMEX® diuron or TELVAR® monuron weed killers provides effective, low-cost control of weeds and grasses for a whole season.



THE PROBLEM:
Deep-rooted perennial weeds—morning glory, leafy spurge, Canada thistle and others.

THE ANSWER:
Easier control of noxious weeds than ever before with TRYSBEN® 200 weed killer. Also controls some woody plants.

THE PROBLEM:
Undesirable growth of brush on plant sites, roadsides, drainage ditches, rights-of-ways.

THE ANSWER:
Economical control of brush with safe, non-volatile, AMMATE® X or with DYBAR® fenuron weed and brush killer.

Only a few examples of the type of situations that mean opportunity for you are shown above. Product descriptions are necessarily brief, too—each of these Du Pont herbicides effectively control many other kinds of weeds or brush. For complete information mail the coupon to Du Pont today.

On all chemicals follow label instructions and warnings carefully.

DU PONT WEED & BRUSH KILLERS

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Better Things for Better Living . . . *through Chemistry*

Du Pont—I. and B. Dept.
Room N-2539, Wilmington 98, Delaware

Please send me more information on Du Pont weed and brush killers.

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